



# Effects of Different Steps in Gender Reassignment Therapy on Psychopathology: A Prospective Study of Persons with a Gender Identity Disorder

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## ABSTRACT

**Introduction.** At the start of gender reassignment therapy, persons with a gender identity disorder (GID) may deal with various forms of psychopathology. Until now, a limited number of publications focus on the effect of the different phases of treatment on this comorbidity and other psychosocial factors.

**Aims.** The aim of this study was to investigate how gender reassignment therapy affects psychopathology and other psychosocial factors.

**Methods.** This is a prospective study that assessed 57 individuals with GID by using the Symptom Checklist-90 (SCL-90) at three different points of time: at presentation, after the start of hormonal treatment, and after sex reassignment surgery (SRS). Questionnaires on psychosocial variables were used to evaluate the evolution between the presentation and the postoperative period. The data were statistically analyzed by using SPSS 19.0, with significance levels set at  $P < 0.05$ .

**Main Outcome Measures.** The psychopathological parameters include overall psychoneurotic distress, anxiety, agoraphobia, depression, somatization, paranoid ideation/psychoticism, interpersonal sensitivity, hostility, and sleeping problems. The psychosocial parameters consist of relationship, living situation, employment, sexual contacts, social contacts, substance abuse, and suicide attempt.

**Results.** A difference in SCL-90 overall psychoneurotic distress was observed at the different points of assessments ( $P = 0.003$ ), with the most prominent decrease occurring after the initiation of hormone therapy ( $P < 0.001$ ). Significant decreases were found in the subscales such as anxiety, depression, interpersonal sensitivity, and hostility. Furthermore, the SCL-90 scores resembled those of a general population after hormone therapy was initiated. Analysis of the psychosocial variables showed no significant differences between pre- and postoperative assessments.

**Conclusions.** A marked reduction in psychopathology occurs during the process of sex reassignment therapy, especially after the initiation of hormone therapy. Heylens G, Verroken C, De Cock S, T'Sjoen G, and De Cuypere G. Reassignment therapy on psychopathology: A prospective study of persons with a gender identity disorder. *J Sex Med* 2014;11:119–126.

**Key Words.** Gender Reassignment Therapy; Psychopathology; Gender Identity Disorder; Gender Dysphoria

## Introduction

According to the DSM-IV-R classification, transsexualism or gender identity disorder (GID) is an extreme form of gender dysphoria characterized by a strong and persistent identification with the opposite sex. It is accompanied by the wish to get rid of one's own primary and secondary

sex characteristics and to live completely as someone from the opposite sex [1]. In Belgium, the prevalence is around 7.75 male-to-female (MtF) and 2.96 female-to-male (FtM) per 100,000, which is similar to other Western European countries [2].

The etiology of transsexualism remains unclear. Besides biological factors, such as hormonal

abnormalities, morphology of sexual dimorphic brain nuclei, and genetic elements [3–8], psychological and sociocultural factors also seem to be important [3,4].

As far as the therapy for GID is concerned, most countries adopt the standards of care from the World Professional Association for Transgender Health. These standards comprise a variety of therapeutic options, including changes in gender expression and role, hormone therapy, surgery, and psychotherapy. The number and type of interventions applied, and the order in which these take place, may differ from person to person [9]. Most of the persons with GID who attend our clinic wish full sex reassignment including genital surgery, and start with hormonal treatment.

Previous research on the relationship between GID and psychiatric comorbidity has led to divergent conclusions. Some studies suggest that GID is frequently associated with severe psychiatric comorbidity, both on axis 1 and 2, from psychoses and major affective disorders [10,11] to severe personality disorders [12,13]. Others show little or no raised levels of psychopathology in transsexual populations [14–16]. A moderate view is that persons with GID may show more psychopathology, yet no severe neurotic or psychotic disorders [17,18]. Of the various symptoms, depression, anxiety disorders, and adjustment disorders are the most common, followed by substance abuse, suicide, and automutilation [1,17–19]. Due to the incongruence between biological sex and gender identity, many persons with GID also have a disturbed body image, which makes them frequently insecure [20]. These findings imply the existence of a link between gender dysphoria and psychiatric disorders, but do not reveal any information about causality.

In the past decades, various studies have been performed to investigate the effects of sex reassignment therapy on psychological status and psychosocial aspects. In the early years, the number of patients was often small and most of the studies did not employ standardized outcome instruments. In 1990, Green and Fleming reviewed the preceding literature and found out that sex reassignment was effective in reducing gender dysphoria and general well-being [21]. In particular, they emphasized the importance of standardized selection criteria for surgery and the use of standardized instruments for outcome measurement. Green and Fleming's conclusions were reaffirmed by Pfafflin and Junge in their review of approximately 70 outcome studies published between 1961 and 1991 [22].

More recently, Smith et al. prospectively studied the outcomes of sex reassignment and concluded that treatment had a positive effect on gender dysphoria, psychological and social well-being, and sexual satisfaction [23]. Similar results were found in the follow-up study by De Cuypere et al., who especially focused not only on sexuality but also on general health and satisfaction with surgical results [24]. Gomez-Gil et al. [25] showed that persons with GID under hormone therapy scored significantly lower on several Minnesota Multiphasic Personality Inventory scales than patients who had not started hormone treatment yet. Contrary to these results, Haraldsen and Dahl, however, could not find any significant difference when comparing Symptom Checklist-90 (SCL-90) scores in pre- and postoperative patients [26]. Murad et al. [27] and Gys and Brewaeys [28] offered, respectively, comprehensive reviews of studies between 1966 and 2008 and after 1990, and emphasized again the lack of standardization. The American Psychiatric Association Task Force on treatment of GID uses their evidence coding system to evaluate studies concerned with treatment issues: most evidence is on at or below level C (cohort or longitudinal study) (refer to Byne et al. for further reading) [29]. The only controlled study on the effectiveness of sex reassignment surgery (SRS) was conducted by Mate-Kole et al. who compared a waiting list condition with a treatment condition and found better results in the postoperative groups, with the group reporting more social and sexual activity, better employment rates, and lower levels of psychoneurotic pathology indicated by Crown-Crisp Experiential Index scores [30]. Another study from Mate-Kole et al. compared GID patient groups before treatment, during hormone therapy and after SRS and showed that a bigger improvement occurs after SRS than after changing the gender role [31]. This suggests that the effect of sex reassignment on psychological status varies in different phases of the process.

The gender identity clinic of the Ghent University Hospital, Belgium, has evaluated and treated persons with GID since 1985. In the past decade, the number of applicants seeking treatment has increased from 35 to 85 per year in 2012. Eighty-five percent of the applicants come from Flanders, the Dutch speaking part of Belgium. The remaining 15% lives in the French-speaking part. Our clinic has an unique position in Belgium as it offers the full range of diagnostic evaluation and psychotherapeutic support, hormonal

treatment, and surgical interventions. Most of the persons attending our clinic are self-referred or referred by an professional caregiver, about two-thirds presents as a member of identified gender and is, at least partially, in their social transition phase. They are often well informed about treatment modalities, and the majority asks for hormonal and surgical treatment. Costs of psychiatric consultations, hormonal therapy, genital surgery, and breast augmentation and removal are reimbursed. Costs of facial hair removal, female feminization surgery, and speech therapy are not covered.

### **Aims**

Due to a significant improvement of the methodological quality of research on the outcome of sex reassignment, the question no longer centers on whether it helps, but on which part of the treatment is responsible for the biggest improvement in terms of quality of life and reducing psychosocial problems. This study aims to shed light on the differentiating effects of gender reassignment treatment by measuring, in a prospective way, the evolution in psychopathological status during different phases of sex reassignment. Additionally, postoperative results are compared with those of general population in order to investigate whether psychopathology disappears together with sex reassignment therapy, or remains present, albeit possibly to a lesser extent.

### **Methods**

#### *Population*

Between June 2005 and March 2009, 90 patients who applied for sex reassignment therapy at our Gender Clinic were asked to participate in this prospective study. Eight patients refused to participate or attended our clinic only once. Eighty-two agreed to participate in the study and were included after giving their informed consent. Twelve patients that were diagnosed with a gender identity disorder not otherwise specified were excluded. Of the remaining 70, all diagnosed with GID, but 12 patients did not undergo full treatment (hormonal and surgical) for several reasons: some were refused because of extensive comorbidity (two individuals with personality disorder, one with acquired brain injury), while others decided for themselves not to start treatment, or desired hormone therapy alone without

feeling the need for genital surgery. One patient committed suicide during follow-up. In the end, 57 patients (46 MtF and 11 FtM) filled out the questionnaires, which is described below. The study was approved by the local ethics committee.

#### *Questionnaires*

##### **SCL-90, Dutch Adapted Version**

The SCL-90 is a widely used 90-item questionnaire consisting of eight subscales (agoraphobia, anxiety, depression, somatization, paranoid ideation/psychoticism, interpersonal sensitivity, hostility, and sleeping problems) and a global score called psychoneuroticism. Higher scores on the global score indicate a higher level of psychopathology. We used the norm group "general population" to compare with the postoperative results from our study population [32,33].

##### **Psychosocial Questionnaires**

To obtain the desired information on several demographic and psychosocial parameters, we developed a short questionnaire on employment, living arrangements, sexual orientation, relationships and sexual contacts, social contacts, substance abuse, and suicide thoughts/attempts. This questionnaire was based on the biographic questionnaire patients filled out at the first treatment attendance. The subjective evolution of mood, happiness, anxiety, self-esteem, and body image was also investigated.

#### *Procedure*

The study was conducted in a follow-up design. We used the SCL-90 to evaluate psychopathological evolution, with baseline assessment at the time of presentation. Follow-up assessment consists of two moments of measurement: 3–6 months after the start of hormone treatment and 1–12 months after SRS. Psychosocial questionnaires were sent to all patients, and the results were examined in consideration of the biographic data that were collected at the time of presentation. The mean follow-up between the first and the last assessment was 39 months (standard deviation 12.7). The data collection is summarized in Table 1. As all patients completed the gender reassignment treatment, except for 11 patients who did not yet receive SRS when we ended the data collection, there were no dropouts in the study population. Missing data are due to incomplete questionnaires. The response rates for SCL-90 and psychosocial questionnaires were 82.5% and 73.7%, respectively.



**Table 1** Data collection

	SCL-90			Psychosocial data	
	Presentation	Follow-up		Presentation	Follow-up
Study group (n = 57)	56*	After HT 47 <sup>†</sup>	After SRS 42 <sup>‡</sup>	54 <sup>§</sup>	42 <sup>¶</sup>

\*No baseline SCL-90 assessment was collected from one patient.

<sup>†</sup>Ten patients did not complete an SCL-90 after hormone therapy.

<sup>‡</sup>Eleven patients did not yet receive SRS when the data collection was ended. Four others did not complete an SCL-90 after SRS.

<sup>§</sup>No baseline psychosocial data were collected from three patients.

<sup>¶</sup>Psychosocial questionnaires were not sent to 11 patients who did not yet receive surgery. Four others did not complete the psychosocial questionnaire.

SRS = sex reassignment surgery; HT = hormone treatment

### Statistics

SPSS 19.0 (SPSS Inc., Chicago, IL, USA) was used to construct a database and perform statistical analyses. A Friedman test was chosen to globally compare SCL-90 scores in the three assessment points, while Wilcoxon tests were used to further compare SCL-90 scores between two assessment points. McNemar and Fisher's exact tests were adopted for comparison of demographic and psychosocial parameters. The significance level was set at  $P < 0.05$ .

### Results

#### SCL-90

Mean SCL-90 scores are shown in Table 2. Analyses show that a difference exists between the overall psychoneurotic distress scores at the several assessments ( $P = 0.003$ ). Further analysis shows this is due to a decrease in the scores after hormone therapy ( $P < 0.001$ ). No further decrease is observed after SRS. The effect of complete treatment is not more pronounced than that of hormone therapy alone. With regard to the different subscales, differences are found between the

measurement points "baseline" and "after SRS" for anxiety ( $P < 0.001$ ), depression ( $P = 0.001$ ), interpersonal sensitivity ( $P = 0.005$ ), and hostility ( $P = 0.008$ ).

Table 2 shows that, unlike scores at time of presentation, SCL-90 scores after hormonal treatment and after surgery are similar to the mean SCL-90 scores of a general population. At the subscale level, the only exceptions are sleeping problems ( $P = 0.033$ ) and, to an almost significant level, psychoticism ( $P = 0.051$ ): after SRS, both are higher compared with a general population. Somatization, that was lower compared with a general population after hormone therapy, settles down to normative levels after SRS.

#### Psychosocial Questionnaires

Baseline and follow-up demographic and psychosocial parameters are summarized in Table 3. None of the variables show any significant difference between baseline and follow-up. Nonetheless, some tendencies can be distinguished, such as an increase in social contacts and a decrease in substance abuse leading to potentially the complete disappearance of drug abuse. Living

**Table 2** Mean SCL-90-scores of "treated population" vs. "general population"

SCL-90 subscale	General population (SD)	Study group					
		Baseline (SD) n = 56	P	After hormone therapy (SD) n = 47	P	After SRS (SD) n = 42	P
ANG [10–50]	12.8 (4.4)	17.0 (6.4)	<0.001	12.4 (5.1)	0.220	13.5 (4.2)	0.286
AGO [7–35]	7.9 (2.3)	9.5 (4.2)	0.065	8.1 (1.8)	0.402	8.2 (2.0)	0.264
DEP [16–80]	21.6 (7.6)	34.7 (14.3)	<0.001	23.8 (9.0)	0.090	24.4 (9.2)	0.086
SOM [12–60]	16.7 (5.3)	18.6 (6.7)	0.042	15.2 (2.7)	<0.001	17.1 (6.2)	0.453
IN [9–45]	12.6 (4.3)	16.6 (7.0)	<0.001	12.8 (4.4)	0.359	15.1 (6.7)	0.051
SEN [18–90]	24.1 (7.6)	31.8 (11.7)	<0.001	24.6 (7.9)	0.277	25.8 (7.1)	0.097
HOS [6–30]	7.2 (2.1)	8.2 (3.0)	<0.001	7.4 (2.0)	0.181	7.2 (1.8)	0.237
SLA [3–15]	4.5 (2.2)	5.8 (3.2)	<0.001	4.4 (1.7)	0.192	5.2 (3.4)	0.033
NEUR [90–450]	118.3 (32.4)	157.7 (49.8)	<0.001	119.7 (32.1)	0.359	127.9 (37.2)	0.082

P values show differences between "treated population" and "general population."

AGO = agoraphobia; ANG = anxiety; DEP = depression; HOS = hostility; IN = paranoid ideation/psychoticism; NEUR = overall psychoneurotic distress; SCL-90 = Symptom Checklist-90; SD = standard deviation; SEN = interpersonal sensitivity; SLA = sleeping problems; SOM = somatization

**Table 3** Socio-demographic and sexual parameters at time of presentation and at follow-up

	Presentation (n = 54)		Follow-up (n = 42)	
	n	%	n	%
Relationship				
None	32	58.2	22	52.4
Stable	22	44.0	18	42.6
Variable	1	1.8	2	4.8
Living situation				
Alone	18	32.1	18	42.9
With partner	21	37.5	16	38.1
With parents	15	26.8	5	11.9
Other	2	3.6	3	7.1
Employment				
Employed	37	66.1	25	59.5
Unemployed	9	16.1	6	14.3
Other (student, retirement, etc.)	10	17.9	11	26.2
Sexual contacts				
None	21	38.2	20	47.6
Only in a stable relationship	25	45.5	19	45.2
Variable	9	16.4	3	7.1
Social contacts				
Good friends	41	73.2	37	88.1
Superficial acquaintances	8	14.3	3	7.1
None	7	12.5	2	4.8
Drugs				
Alcohol abuse	8	14.8	1	2.4
Cannabis	4	7.4	0	0
Other drugs	2	3.7	0	0
Suicide attempt	5	9.4	4	9.3

situations changed with more people living alone and fewer with their parents. Also, “other” employment went up while employment went down. Reports of no sexual relationship went up, while the prevalence of suicide attempts did not change.

After treatment, the majority of patients indicated that they have a better mood, are happier, and feel less anxious than before (Table 4). They also seem to be more self-confident and encounter a better body-related experience, indicating a less distorted self-image than before treatment.

Most patients (57.9%) subjectively experienced the biggest progress after the start of hormone therapy. 31.6% felt the biggest evolution after SRS and 10.5% already noticed the most important change during the diagnostical phase.

## Discussion

Analysis of the SCL-90 scores in the treated group has shown that sex reassignment therapy does influence the level of psychopathology in GID patients, with significant reduction in anxiety, depression, somatization, psychoticism, interpersonal sensitivity, hostility, and overall psychoneu-

rotic distress. Although not strictly comparable, results of lower levels of psychopathology in post-operative transsexuals are consonant with other studies or reviews that use independent pre- and postoperative groups [21–25,27]. The findings that, after SRS, somatization is returning to normal again and psychoticism is almost higher compared with a general population ( $P = 0.051$ ) could be explained by an initial euphoria caused by the relief they experience after starting hormonal treatment. Furthermore, sleeping problems become significantly higher after SRS compared with a general population. After SRS, transpeople probably experience more distress as they are again confronted with stigma and other burdens.

While Mate-Kole et al. suggested the most important factor to be SRS [31], we found that the biggest decrease in psychological dysfunctioning is caused by initiation of hormone therapy or confirmation of the diagnosis by a professional caregiver. This finding was consistent with the subjective feeling of most treated patients and suggests that recognition and acceptance of the GID play an important role in their transition process.

The comparison of pre- and postoperative SCL-90 scores with the mean score of a general population provided further information on the effect of treatment. In agreement with several other studies [10–12,17,18], our GID population scored significantly higher on psychopathology than a general population at the time of presentation, while that difference completely disappeared

**Table 4** Subjective psychological evolution since presentation and suicide thoughts at the moment of follow-up

	Study group (n = 42)	
	n	%
Mood		
Better	40	95.2
Similar	2	4.8
Happiness		
Happier	39	92.9
Similar	0	0.0
Less happy	0	0.0
Anxiety		
Less anxious	34	81.0
Similar	6	14.3
More anxious	2	4.8
Self-confidence		
More self-confident	33	78.6
Similar	8	19.0
Less self-confident	1	2.4
Body-related experience		
Better	41	97.6
Similar	1	2.4
Suicide thoughts	7	16.7

after hormonal treatment. This finding implies the existence of a relationship between gender dysphoria and psychiatric comorbidity, and suggests that treatment not only causes a decrease in the gender dysphoria, as documented in other studies [21–23], but also a resolution of concomitant psychopathology.

The distinguished trends in demographic and psychosocial parameters are comparable with some findings in literature [23,24]. The presumption that sex reassignment has a positive influence on employment [30,34] could not be confirmed, probably due to the relatively short follow-up period. The finding that regular employment goes down, and “other” employment goes up, could fit in the daily practice observation that transpeople quit with their former jobs and start studying again. Compared with previous literature results that detected substance abuse in up to 60% of GID patients [11,12], we noticed very little abuse in our population. Possible explanations could be that our population was relatively small and the question rather subjective, and that problematic abuse forms a relative contraindication for sex reassignment therapy. Both suicide attempt percentages (10.9% at time of presentation, 9.8% at follow-up) were also slightly lower than those described in literature [16]. The latter finding is in accordance with some recent studies with regard to the high prevalence of suicidality in transpeople, even after their sex reassignment therapy [35].

The strengths of this study lie in its follow-up design and the size of the population. The study population of 57 participants represents one of the larger studies of its kind. To our knowledge, it is the first publication that focuses on the effects of the separate parts of the sex reassignment therapy. Nevertheless, several limitations can be discussed. We are acutely aware of the presence of selection bias: a significant percentage of gender dysphoric people never attends our or “a” gender clinic and this may be accounted for several reasons, including psychosocial factors. The used questionnaires form another source of bias: SCL-90 results are based on a “snapshot” measurement that may not be representative of one’s general mental state. Furthermore, the follow-up period was too short to evaluate the effects of treatment on outcome measures as work and relationships. Finally, we certainly have to allow for the spontaneous evolution of complaints due to environmental factors and the passing of time. On the whole, our study population is a selected group that is not fully

representative for the larger group of gender dysphoric people: they all fulfilled criteria for GID and were eligible for SRS. This perspective might certainly have an influence on the level of psychoneurotic distress. If there had been less certainty, at the end of the diagnostic phase and after initiation of hormonal treatment, about receiving SRS, results could have been different.

Future research challenges especially lie in comparing treated persons with GID with untreated patients. Additional questionnaires, including in-depth interviews, should investigate more thoroughly the specific effects of therapy on psychopathology and psychosocial state. Also, further exploration in patients seeking hormonal therapy without expressing desire for SRS is warranted, as we found initiation of hormonal therapy to be a major event in reducing psychopathology.

## Conclusion

In conclusion, our findings confirm the hypothesis that sex reassignment therapy had a positive influence on co-occurring psychopathology if present in GID patients at presentation, by lowering the overall level of psychoneurotic distress. After treatment, our GID population showed a similar level of psychopathology compared with a general population, while they scored significantly higher at baseline. The most important effect seemed to result from the confirmation of the diagnosis and the initiation of hormone therapy, a finding that offers insights into a more individualized approach to persons suffering from GID.

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